Concept Presentation

Sixth Open Forum on Metadata Registries

To be held January 20-24, 2003

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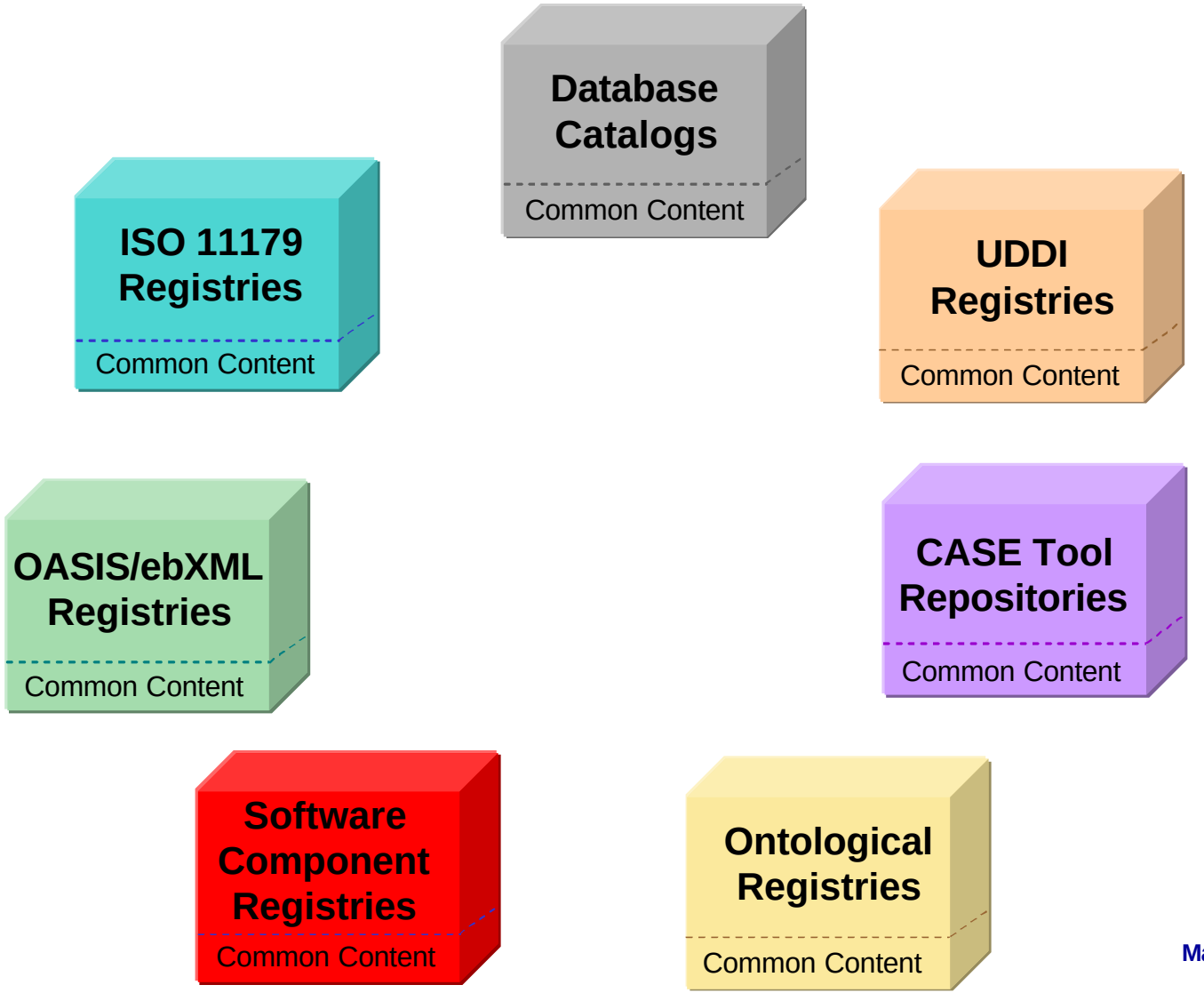
Registries

- Using this term loosely, there are several types of registries in the area of data management and interchange.
- The registries have some common, overlapping content, which is extended and utilized in different ways.
- The registries vary according to the intended purpose, granularity of contents, the level of semantics management.

Types of Registries



Types of Registries

- OASIS/ebXML XML Registries – XML Artifacts
  - Register XML Artifacts - Includes schemas and DTDs. XML schema relate to a paper form, EDI document, or reporting requirement.
  - Emphasis on syntactic (structure) information.

- ISO 11179 Metadata Registries – Data Semantics
  - Register Data Elements, components of data elements and groups of data elements. For example, country codes for customer place of residence. Includes: data element concepts, data elements (including representation), value domains, and (multiple) taxonomies.
  - Emphasis on semantic information such as definitions of data elements and value meanings, and stewardship responsibilities.

- Universal Description, Discovery, and Integration (UDDI) Registries – Web-based Business Services
  - A White page directory of the business activities of firms.
  - Emphasis on interface specifications.

Types of Registries (continued)

- Database System Registries (System Catalogs/Data Dictionaries/ Repositories) – Schema, integrity & operational info.
  - Includes all elements of database schemas: data elements, relations, integrity constraints.
  - Emphasis on information required to make database systems work for queries, etc., not on semantic management.

- Case Tool Registries (Encyclopedias/Repositories) – Data model and application program logic
  - Includes information needed to create a database and potentially the program code for a system. Contains database schemas.
  - Emphasis not on semantic management.

- Ontological Registries – Concept Structures
  - Includes relations among concepts (subsumption, inheritance,…) and axioms for inference among concepts, e.g., temporal/spatial reasoning, etc.
  - Emphasis is on semantics.

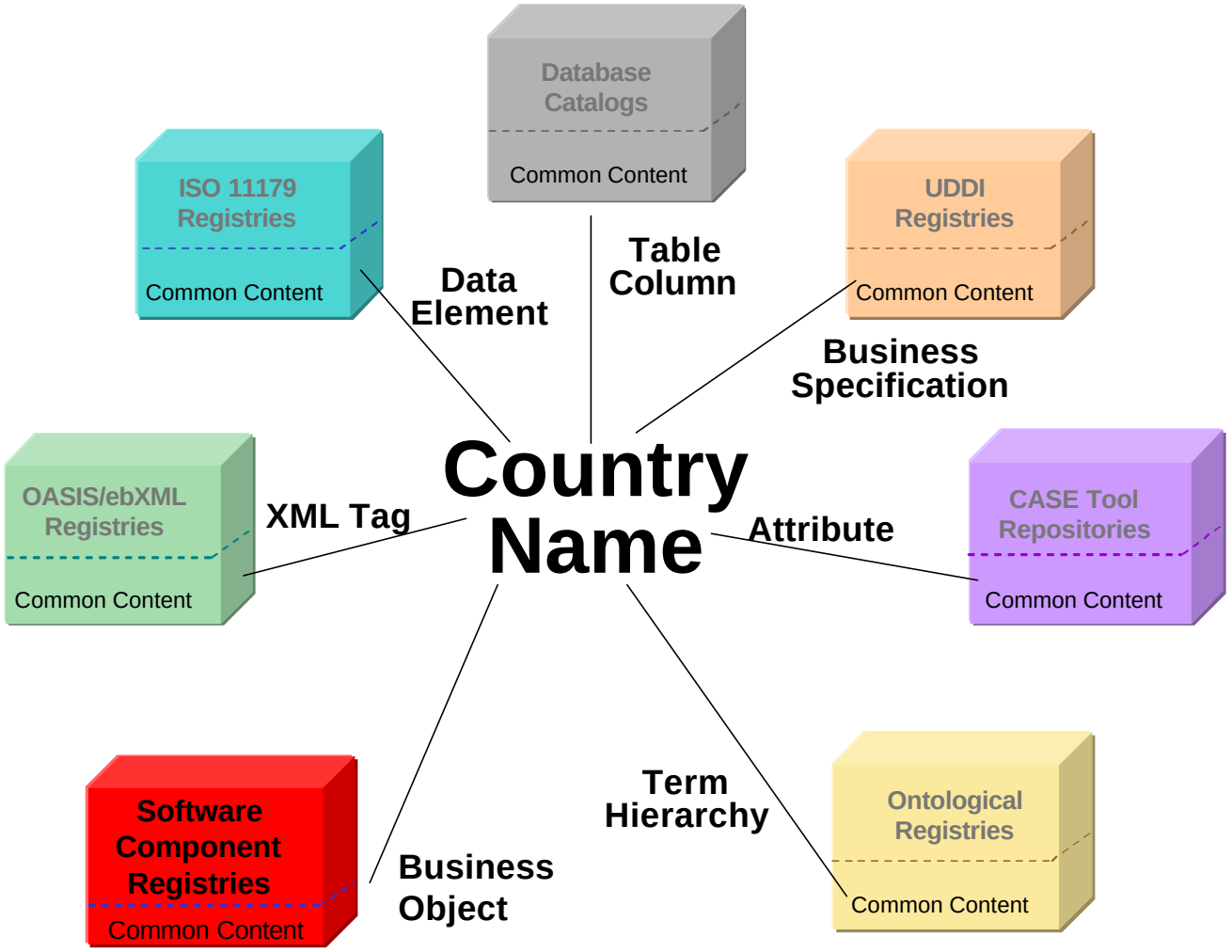
Types of Registries (continued)

- **Software Component Registries** -- Software Components
  - Reuse software components built on specific vender platforms such as EJB, COM, CORBA IDL etc.
  - Include basic common elementary objects and object patterns
  - Emphasis on reusability of software component to build flexible and standardized business systems.

Theme: Cooperation between Registries & Management of Semantics

- Users work with several of these registries simultaneously, since the registries perform different functions.
- There is a need for the registries to cooperate (better: to interoperate), since they contain related and sometimes overlapping information. The data must be kept updated and synchronized with a minimum of effort.

Registries
Example of Common Content



Semantics is important to interoperation Example: Country Identifier

Data Element Concept

Name: Country Identifiers
Context:
Definition:
Unique ID: 5769
Conceptual Domain: →
Maintenance Org.:
Steward:
Classification:
Registration Authority:
Others

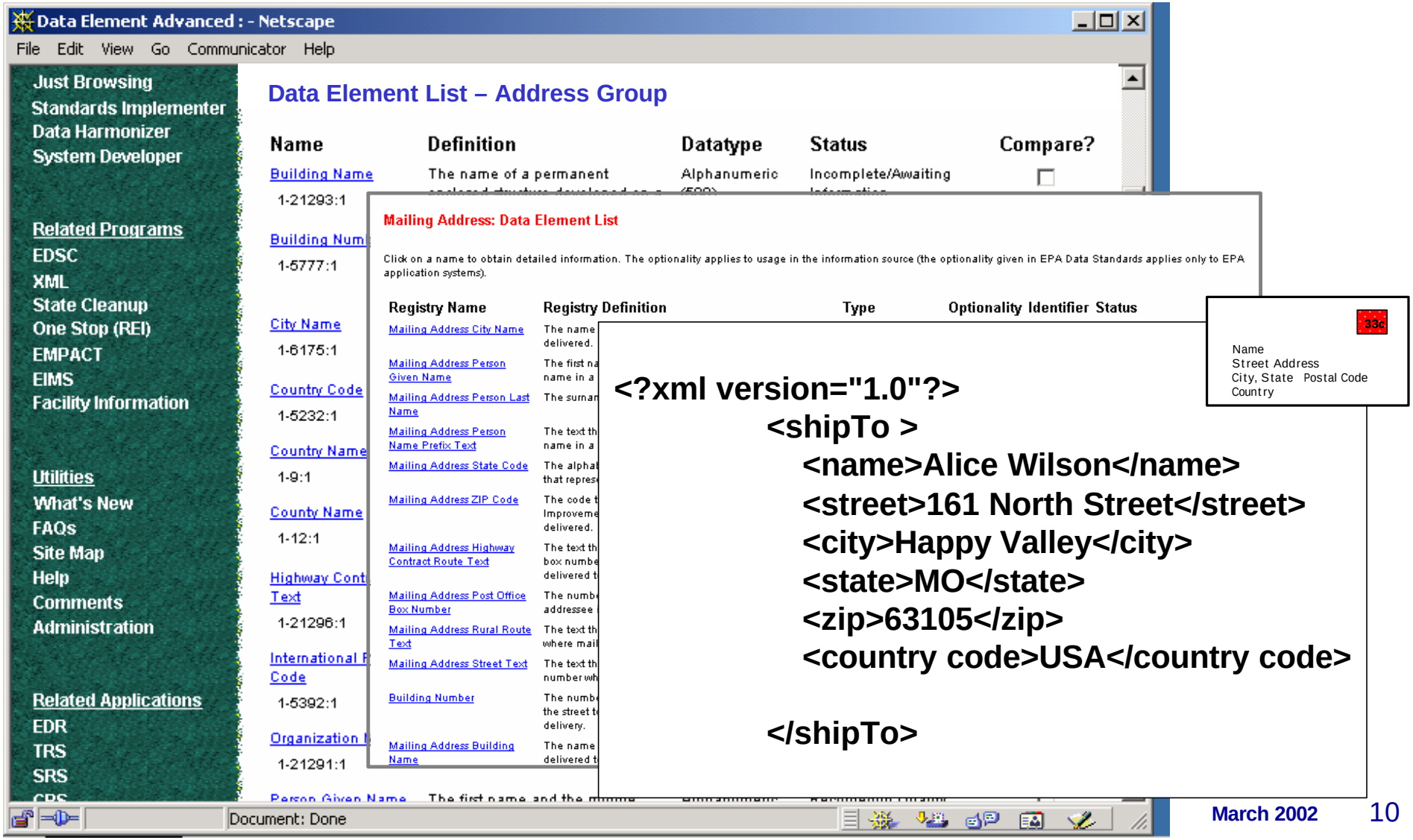
Algeria
Belgium
China
Denmark
Egypt
France
. . .
Zimbabwe

Data Elements

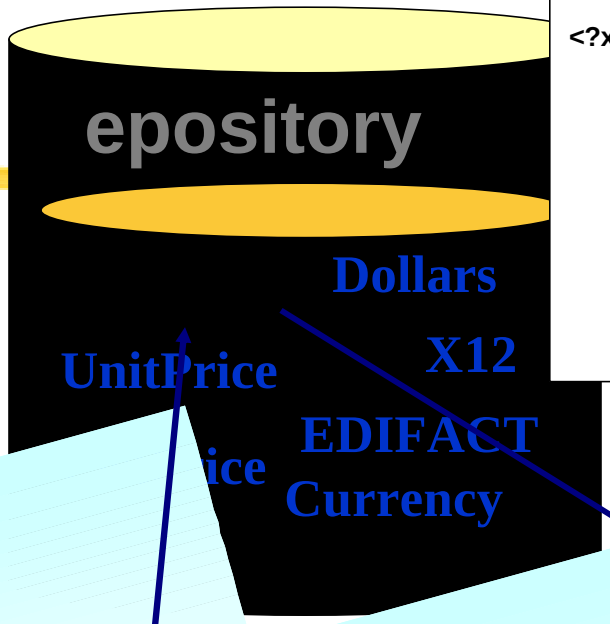
Name:
Context:
Definition:
Unique ID: 4572
Value Domain:
Maintenance Org.
Steward:
Classification:
Registration Authority:
Others

ISO 3166 English Name	ISO 3166 French Name	ISO 3166 2-Alpha Code	ISO 3166 3-Alpha Code	ISO 3166 3-Numeric Code
Algeria	L`Algérie	DZ	DZA	012
Belgium	Belgique	BE	BEL	056
China	Chine	CN	CHN	156
Denmark	Danemark	DK	DNK	208
Egypt	Egypte	EG	EGY	818
France	La France	FR	FRA	250
. . .	. . .	. . .	. . .	. . .
Zimbabwe	Zimbabwe	ZW	ZWE	716

ISO 11179 Registry



OASIS/ebXML XML Registry




```
<?xml version="1.0"?>
        <shipTo >
           <name>Alice Wilson</name>
           <street>161 North Street</street>
           <city>Happy Valley</city>
           <state>MO</state>
           <zip>63105</zip>
           <country code>USA</country code>

        </shipTo>
```

Collaboration Partner #1

Collaboration Partner #2

Schema *or Template*

<Rep href= "http://www.disa.mil">DISA</Rep>

<ELEMENT rep= 'DISA' name='Country' Biz ='VI304' >

Schema *or Template*

<Rep href= "http://www.disa.mil">DISA</Rep>

<ELEMENT rep= 'DISA' name='CntryCode' Biz ='VI304'

<Country>JPN</Country>

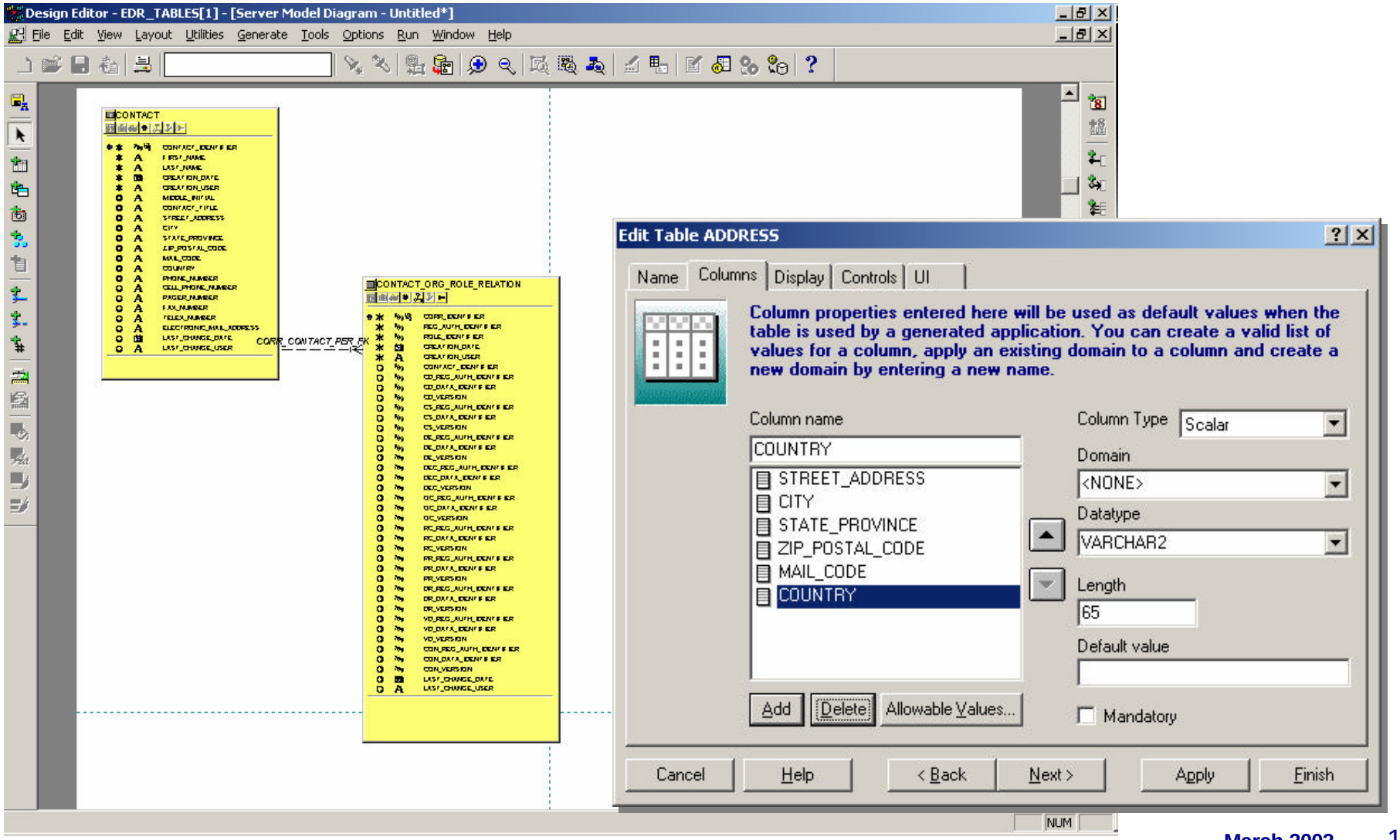
<CntryCode>JPN</CntryCode>

UDDI Registry

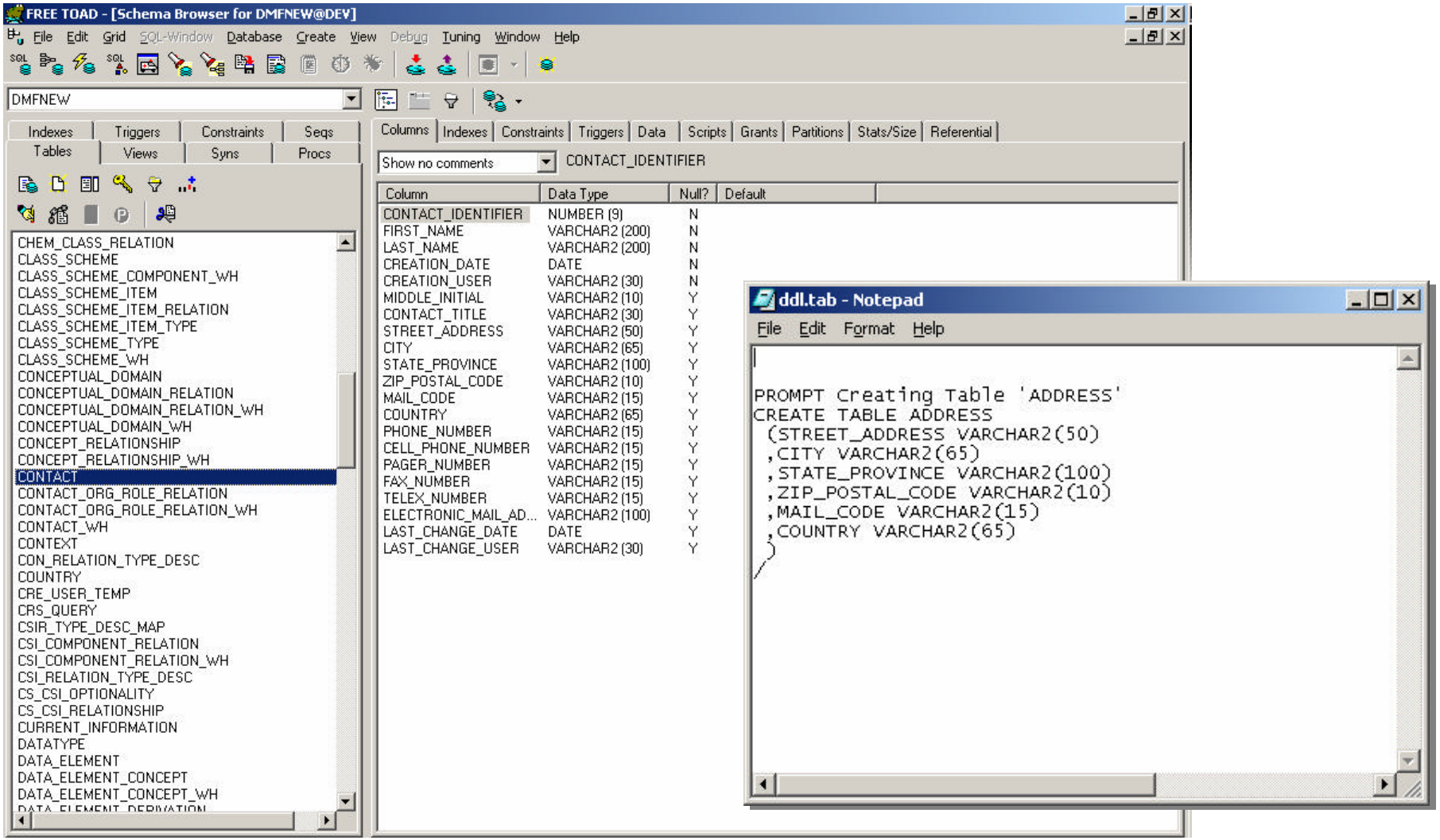

```
<?xml version="1.0"?>
        <shipTo>
            <name>Alice Wilson</name>
            <street>161 North Street</street>
            <city>Happy Valley</city>
            <state>MO</state>
            <zip>63105</zip>
            <country code>USA</country code>

        </shipTo>
```

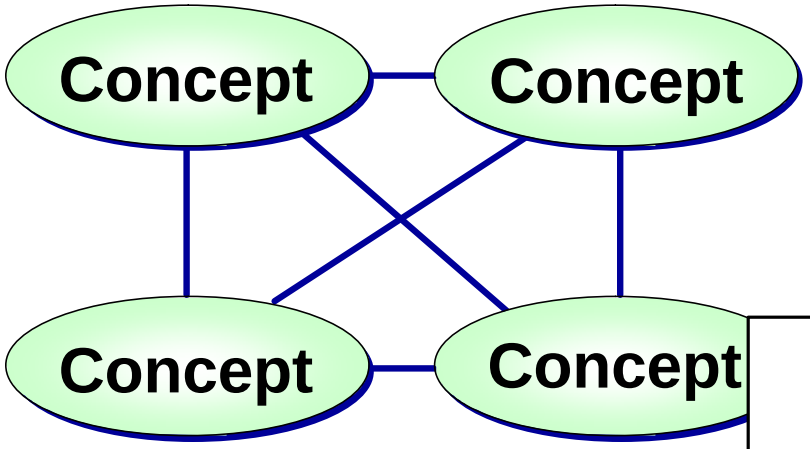
Case Tool Repository

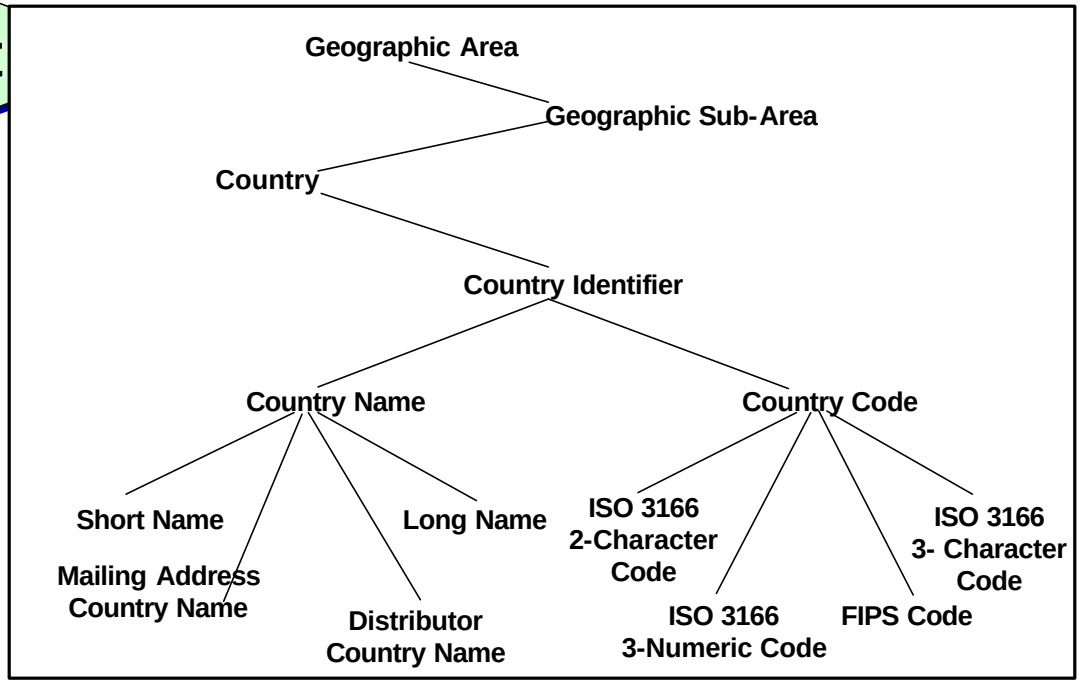


Database Catalog

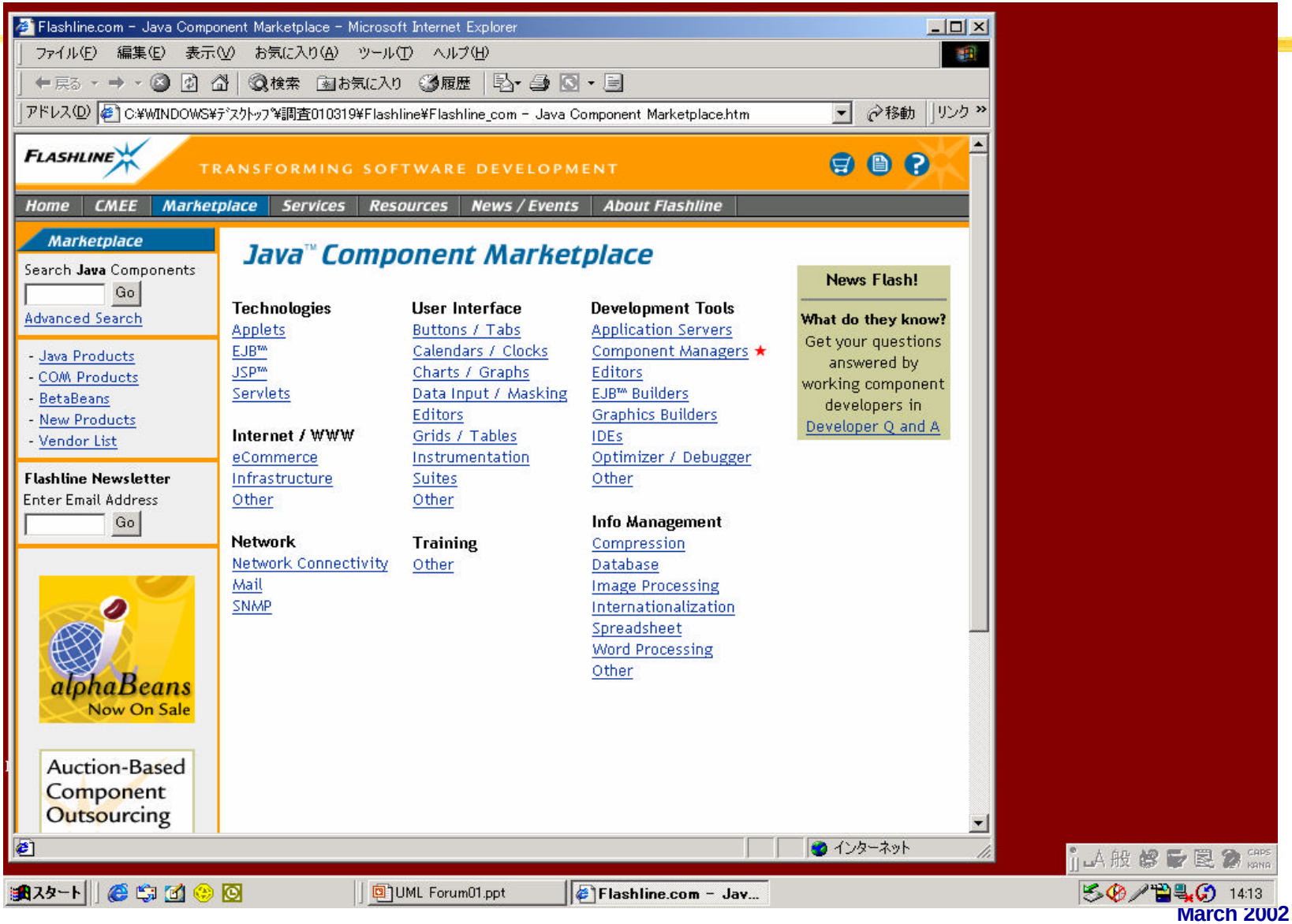


Ontological Registry

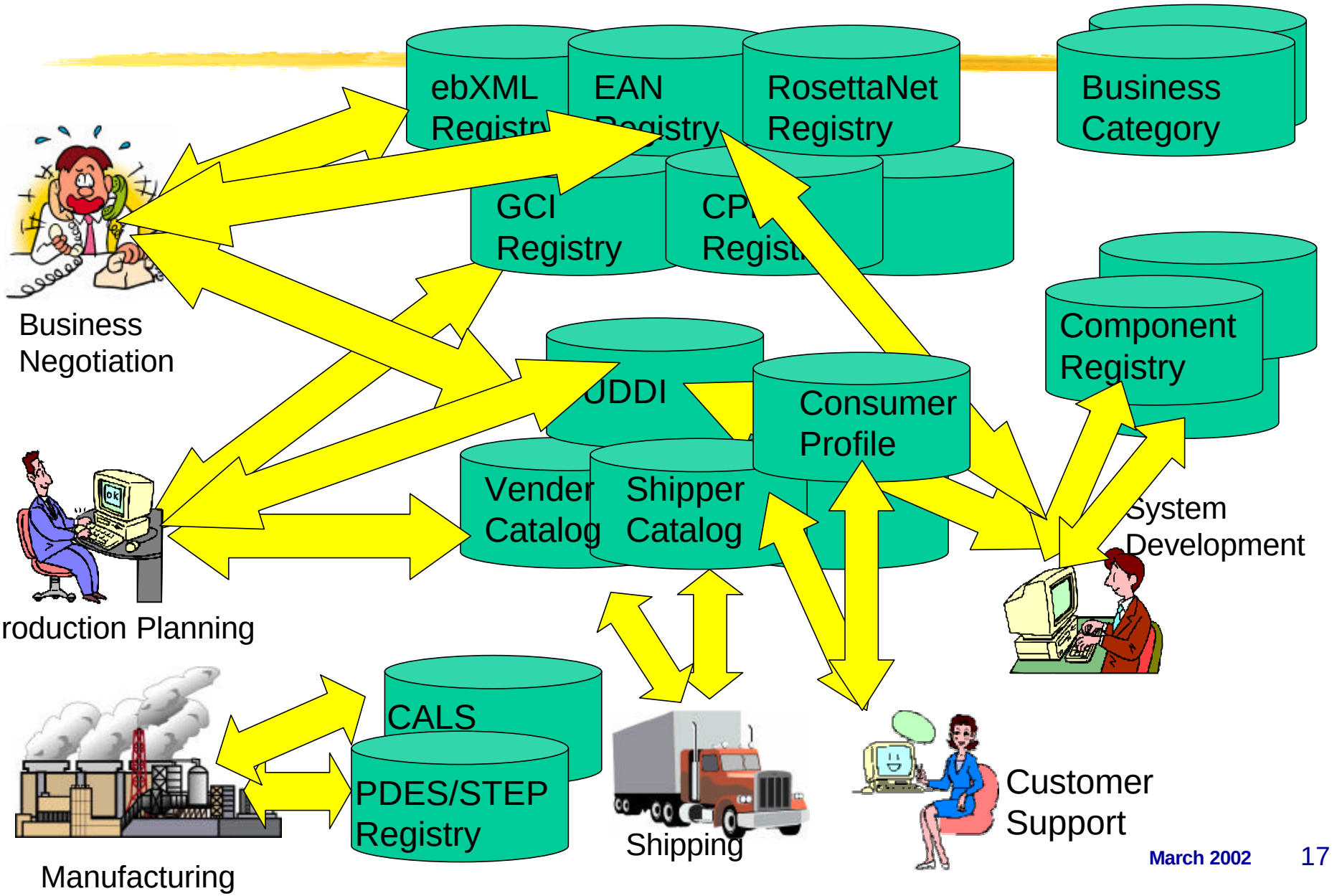




An Example of Software Component Registry



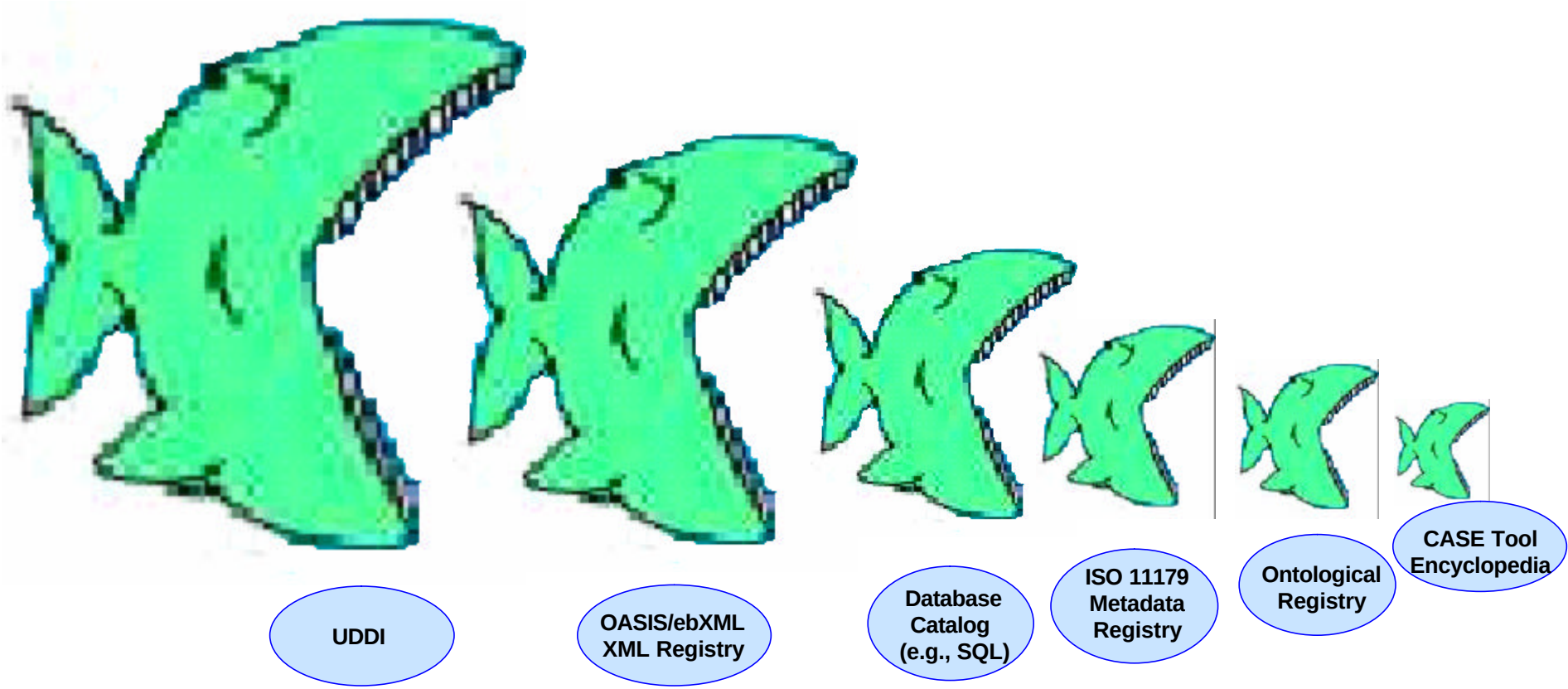
Needs for Registry Interoperation



Consolidation or Interoperation? (continued)

- Does one registry acquire all of the key functionalities?
- Do distinct capabilities require multiple registries with interoperability?

Consolidation or Interoperation?



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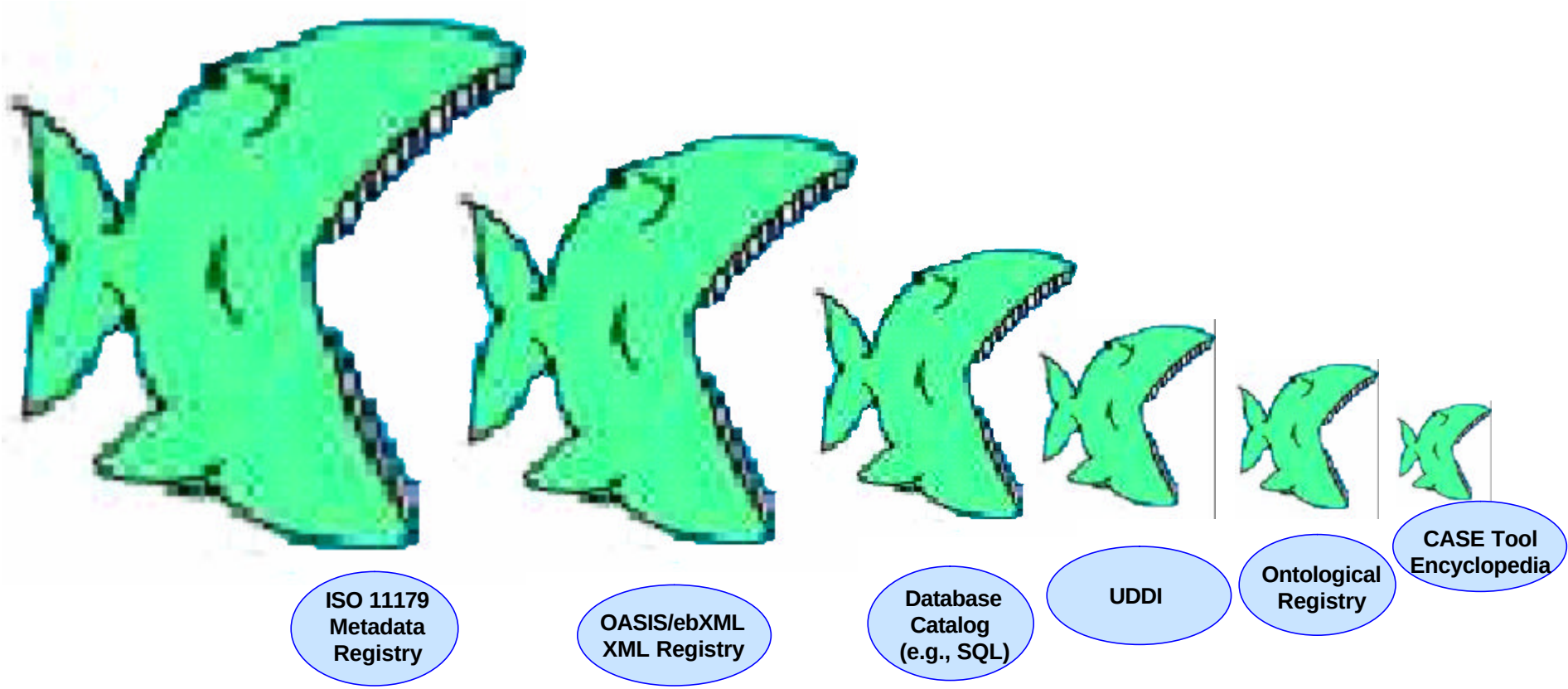
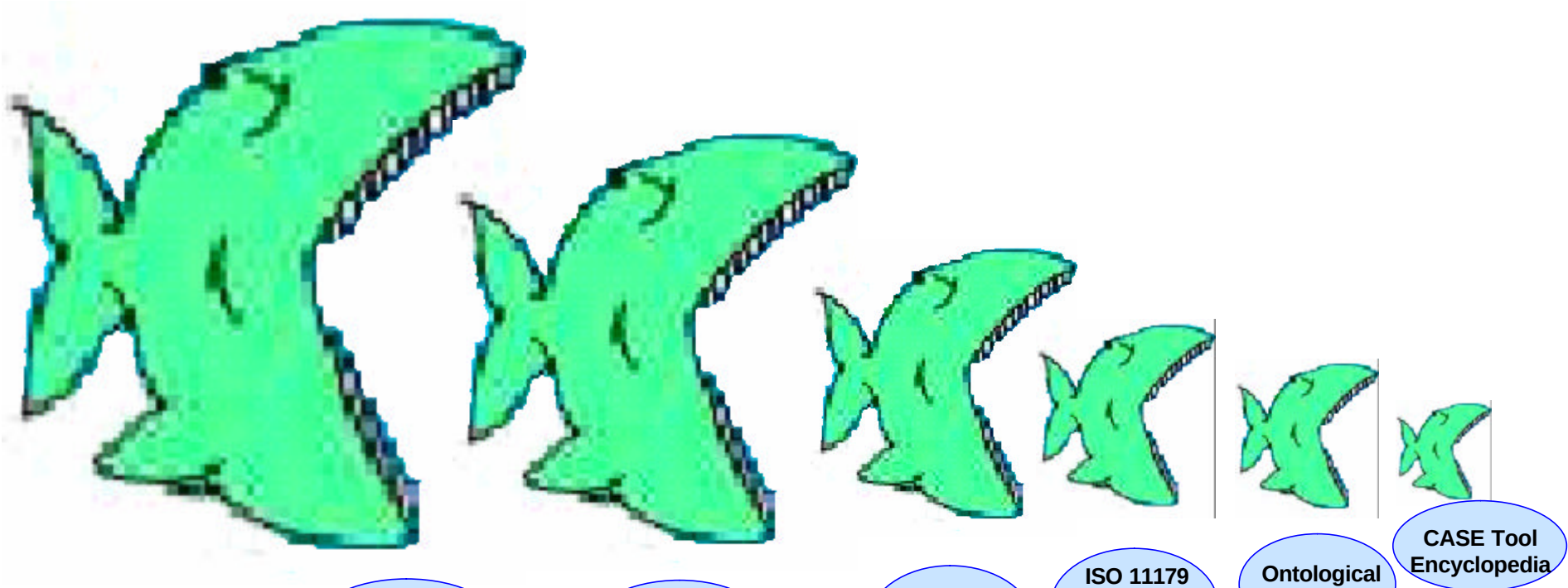
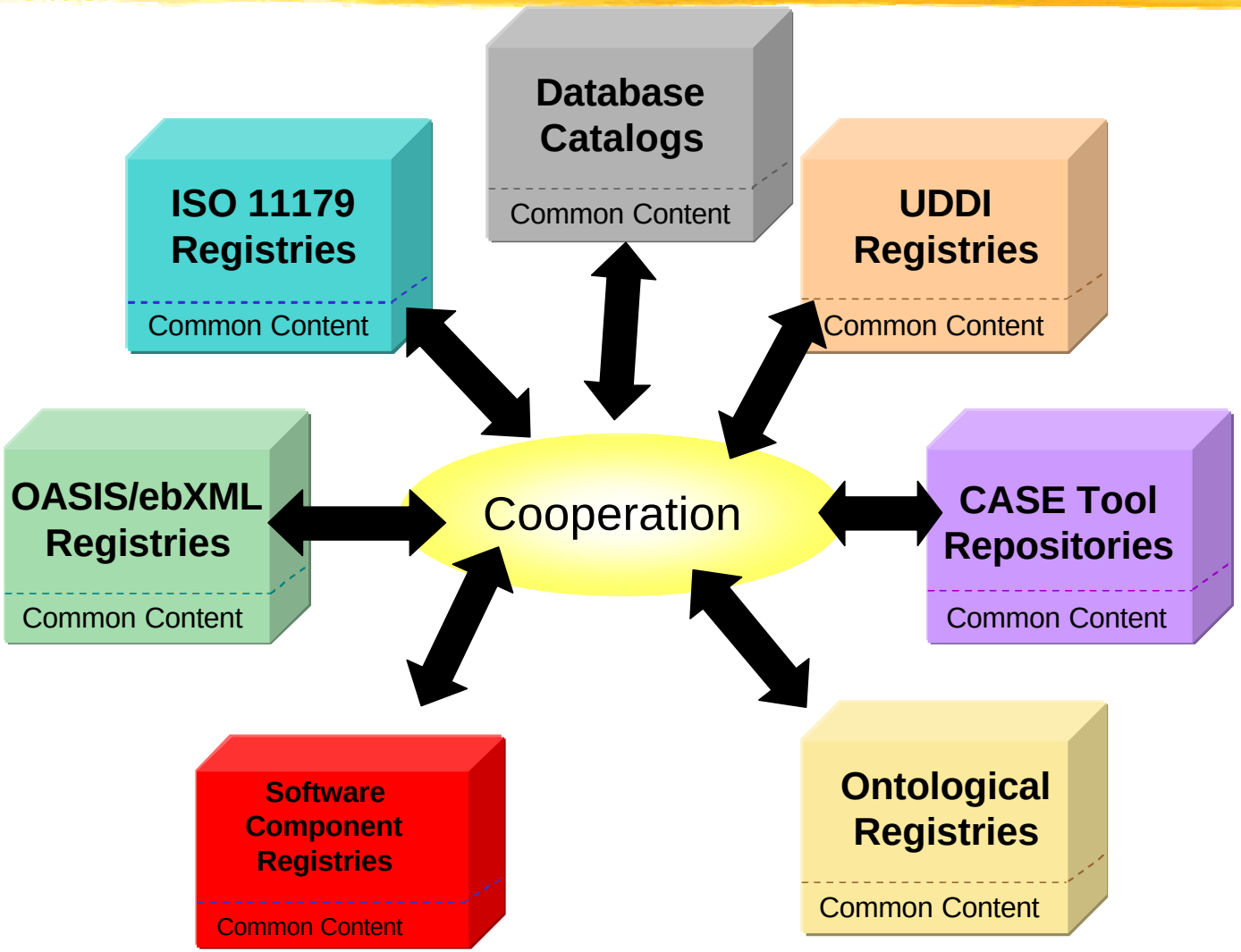


Consolidation or Interoperation?



Registry types



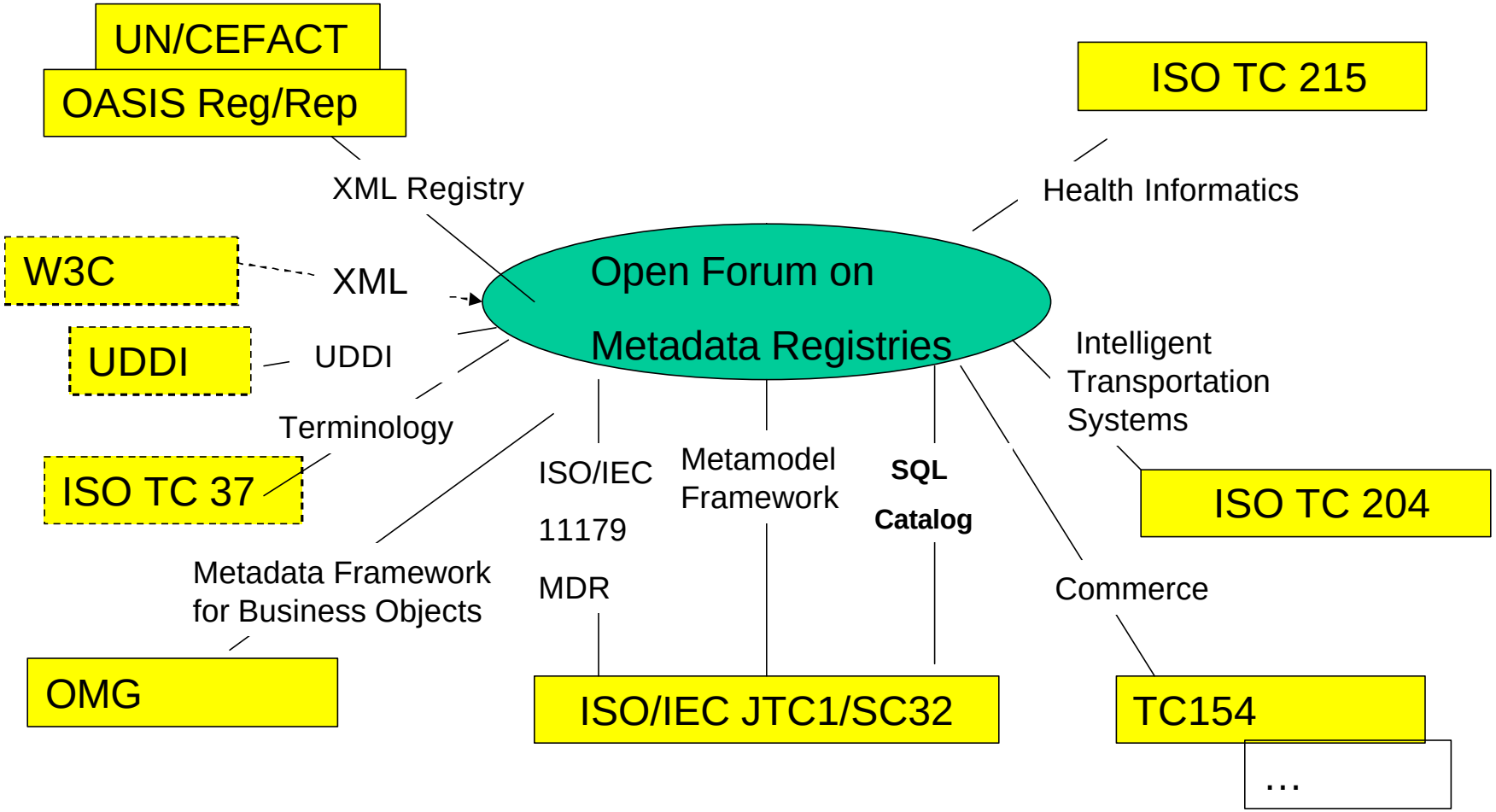
Open Forum on Metadata Registries
Semantic Interoperability between Registries

- Major topic:
  - How to implement and use registries,
  - cooperation between registries
  - semantics management
- Participants:
  - Standards developers, Software developers, Practitioners.
- Related topics:
  - Tutorials on the standards.
  - Tracks with demonstrations for application areas

Conference is intended to describe the registries, demonstrate their use, encourage progress toward cooperation between registries, and showcase progress made.

Some Standards Development Organizations

(Related to Registries)



Tracks – Standards and Working Implementations

Standards:

- Standards Track

Practitioner Tracks:

- Defense Track
- Environment Track
- Healthcare Track
- Learning Technologies and Knowledge Management Track
- Statistics Track
- Transportation & Aviation Track
- Electronic Business Track?

In Sum:

- A conference drawing together standards developers, software developers and practitioners.
- The conference is intended to introduce the registries, show how the registries are used and describe the related standards. A major topic will be cooperation between the registries to manage semantics.
- ISO/IEC 11179 is primarily aimed at semantics management and will be the focus of demonstrations in some of the practitioner tracks. Special emphasis will be given to interoperation between 11179 registries, UDDI registries, XML registries/repositories, database catalogs, etc.
- The conference organizers will work with standards developers, software developers and practitioners to encourage progress toward cooperation & interoperability. The conference is intended to showcase progress made.
- The conference will have separate tracks for various communities of interest.
- Presentations are by invitation
- The conference will have multiple sponsors/hosts, with ISO/IEC JTC 1 SC32 (Data Management and Interchange) /WG 2 (Metadata) as the initial sponsor and EPA, the Federal CIO Council's XML Working Group and the Lawrence Berkeley National Laboratory as the initial hosts.